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SOME NEW

THOUGHTS

Founded upon New

PRINCIPLES,

CONCERNING

A Threefold Motion of the Earth.
The Rectification of the Kallender.
The Flowing and Ebbing of the Sea.
The Nature of the Magnet.
The Variation of the Compaſs.
The Cauſe of Sea Currents, and Trade Winds.
The Various Motions of all the Cœleſtial Orbs.
The finding out the true Place of the Moon.
And Facilitating the Diſcovery of the Longitude.

Not before thought of, or not offer'd to the World in this Manner.

Moſt Humbly propos'd, and offer'd to the Conſideration of the Learned and Ingenious, as Subjects of further Contemplation and Improvement. But in a more particular Manner to the Honourable, the Learned, and Ingenious Gentlemen of the *ROYAL SOCIETY.*

By *B. H. J.*

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26

ERRATA.

Page 7. *Line* 19. *for* Middle of the Summer, *read*, Middle of the Firſt Summer. *Line* 26. *for* At Midſummer, *read*, At the Firſt Midſummer.

MVSEVM
BRITAN
NICVM

TO THE

Moſt Auguſt, High, Mighty, and Illuſtrious Monarch,

GEORGE LEWIS,

By the Grace of GOD,

Of *Great Britain*, *France*, and *Ireland*,

KING,

DEFENDER of the FAITH, *&c.*

SOVEREIGN PRINCE

Of *Brunſwick-Lunenburgh*, *Hanover*, &c.

ELECTOR,

And STANDARD BEARER,

OF THE

Roman EMPIRE, *&c.*

This Book is moſt humbly Dedicated,

By Your MAJESTIES

Moſt Loyal

And Dutiful Subject,

B. H. J.

TO

His ROYAL HIGHNESS,

The moſt Illuſtrious

GEORGE AUGUSTUS,

Prince of *Wales*.

Hereditary, and Electoral Prince,

OF

Brunſwick-Lunenburgh, Hanover, &c.

AND

Duke of *Cambridge*, &c.

This Treatiſe is moſt humbly Dedicated,

By Your ROYAL HIGHNESSES

Moſt Obedient

Humble Servant,

B. H. J.

TO

The Honourable, the Learned, and Ingenious GENTLEMEN, of the ROYAL SOCIETY.

GENTLEMEN,

THE great Honour and many precious Benefits which have accru'd to the Britiſh Dominions, and all the Chriſtian World by your great Learning, wiſe Conduct, and Indefatigable Application, to the Performance of whatever might tend to anſwer the great Ends of your Royal Conſtitution, is ſo well known, and has gain'd you ſuch univerſal Renown, Applauſe, and juſt Admiration, by all who know how to value ſuch a great Bleſſing to the World (as they ought to do) that I could not forbear, upon this Occaſion, to let it appear to you, that I am one of that Number; and ſince you have upon all Occaſions heretofore, in a moſt eminent Manner, been pleas'd to ſignalize your Regard to the Searchers after Natural Knowledge, or the Knowledge of Natural Things, which has been by your Patronage as well as conſtant Endeavours, ſo highly propagated and advanc'd to the greateſt Improvement imaginable; and alſo your Tenderneſs in cheriſhing the weakeſt Attempts for that End: I come to you, with all that due Reſpect which I ought (as your juſt right) to expreſs, praying, that according to your great Character for Generoſity (of which you are ſo highly worthy) you will be pleas'd to have ſuch Regard to the weak Attempt in this ſmall Tract, that it may be receiv'd under your Patronage, if it may be found worthy of your Notice, it being ſubmitted to your deep Penetration for Correction, if in any Reſpect you ſee it neceſſary; in which Caſe I comfort my ſelf with *this Conſideration, That being in the Hands of ſuch great Wiſdom, Candour, and parental Tenderneſs; I ſhall be dealt with according to my honeſt and ſincere Intention of doing Service to the World, and not according to the Weakneſs of my Performance; more eſpecially conſidering that I offer it to the Publick, only as general Hints for further Conſideration and Improvement, by thoſe who are moſt capable of judging concerning the Nature and Importance of theſe Things And I pray, that this my Addreſs to you may be accepted as an Acknowledgment, that I think none more capable of judging in this Caſe than your ſelves. With all due Regard I ſubſcribe my ſelf,*

GENTLEMEN,

Your moſt Humble Servant,

B. H. J.

TO

To the Ingenious

READER.

BEING led into the following Thoughts, in the Courſe of my Study upon another Subject, I concluded that it could not be amiſs to communicate them to the Publick, becauſe I have not heard of any ſuch Things from any other Perſon, nor read any Thing like them before in any Author, either of former Ages, or the Preſent.

I did at firſt intend to write upon this Subject more at large; but in Regard, that ſuch an Undertaking would be too gteat a Digreſſion, from the Work in which I was before ingag'd; I choſe rather to give this Hint to the World at preſent, by thus ſtarting this freſh Foundation of a New Syſtem, than to delay one Moment a Thing of ſuch Conſequence, and from whence Mankind may reap ſuch great Advantages, when thoroughly digeſted by the Learned and Ingenious in the Mathematicks, and others whoſe Thoughts and Genius are turn'd and adapted to ſpeculative Studies of this Nature.

And this ariſes in me from the Deſire of doing all the Good I can to Mankind; rather chuſiing to be anticipated in the full Demonſtration of theſe Things, and thereby give the Credit and Advantage to another, than that the World ſhould be in Danger of loſing the Benefit thereof, by any Accident that may happen to delay me, after the finiſhing of the preſent Work I am ingag'd in.

I ſhall therefore as in haſt, deliver my preſent Thoughts, hopeing to ſee them better digeſted, either by ſome other Hand, or by my own hereafter, which ſhall be (according to my preſent Intentention,) as ſoon as I can further purſue them, in ſuch a Manner as moſt effectually and thoroughly to accompliſh ſuch a uſeful Work.

The

The Threefold Motion of the

EARTH

CONSIDER'D, *&c.*

IT being already allow'd by the moſt eminent Mathematicians of the preſent Age, That (according to the Syſtem of *Copernicus*) the Earth has a diurnal Motion about its own Axis.

This Thought begot in me another concerning its other different Motions, one to the North, and the other to the South; which being duly conſider'd, it does plainly appear, that the Earth had in its ſelf, by its firſt central Poſition, in its proper Sphere, a preparatory Capacity for a threefold Motion, and that, as ſoon as it receiv'd any Motion at all it began the ſame, and that it has had ever ſince, and has now, thoſe Three different diſtinct Motions.

Yet notwithſtanding they are Three, diſtinct in Nature, Order, and Time, they all concur together, unite, and joyn as one, in the higheſt Harmony, moſt ſociable and cloſeſt Union, and the moſt beautiful and beneficent Order, that is or can be neceſſary, for anſwering the great Ends of infinite Wiſdom in their Creation, and in ſuch a Manner as to be moſt beneficial, uſeful and felicitating to Mankind, the native Inhabitants thereof; and alſo to ſuch other of its neighbouring Orbs, as GOD in its Creation intended and ordain'd, that it ſhould in its Station in the Univerſe be moſt uſeful, both in Reſpect to its Phænomena and making its Revolutions with them, in Natural and Periodical Time, or ſuch other native Influence as it may have upon them, or they upon it, according to the univerſal Oeconomy of Nature, in which the Earth according to its appointed Poſt and Uſefulneſs, ſuſtains its Share, and acts its Part.

And this Aſſertion concerning its Threefold Motion I ſhall endeavour to illuſtrate and make very plain, even to the Underſtanding of the meaneſt Capacity.

For we may very well (in Reaſon, and from the wiſe Order we behold in the Creation) not only ſuppoſe, but poſitively conclude and allow, That when God had prepar'd the Earth for Motion, he plac'd it in ſuch a Situation, as that the Equinoctial Line ſhould be directly oppoſite to the Centre of the Sun, not at all inclining either to the North or to the South of it: And for ſuch a Manner of Situation I ſhall give ſufficient Reaſons in their proper Place.

Now this being the firſt Central Poſition of the Earth in its proper Sphere, before it receiv'd any Motion at all, as we do allow, that by the irreſiſtible Will and almighty Power of the great Creator, it was made at his Signal, to ſtart forward on its perpetual Motion from Weſt to Eaſt.

So we may as well conclude, and as poſſitively allow, that it did then alſo at that ſame Inſtant, begin upon, or enter into, a Byaſs, Tendency, or Inclination toward the North, or toward the South; but this, in a Motion more moderate, and not ſo rapid as that toward the Eaſt.

And if this firſt began toward the North, and continuing perpetually, did alter the Poſition of the Earth that Way to 23 Deg. 30 Min. the Limit in Nature, or utmoſt Bounds of the Centre of the Sun, with Regard to the Earth, either to the North or the South of the Equinoctial Line, it muſt of Neceſſity, when at this Northern Boundary, by this Means bring the Southern Tropick to be directly oppoſite to the Centre of the Sun, from whence the Equinoctial had before departed, when it began its Alteration towards the North; and being here ſtop'd at its utmoſt Northern Limit, it muſt return again to its firſt Poſition in the ſame Manner and Time it departed from it, bringing the Equinoctial to its firſt Place again, by which it finiſhes the Northern Revolution, and then, after that, it muſt depart a ſecond Time from the Centre of the Sun, beginning a Motion, Byaſs or Inclination quite contrary to the other, in order to perform another Revolution toward the South; which being done in the ſame Manner and Time as the other, having brought the Northern Tropick to the Centre of the Sun, as it did the Southern before, the Equinoctial is brought back a ſecond Time to its firſt Place, whereby the Southern

Revolution is finiſh'd alſo, being the third diſtinct Motion of the Earth; ſo that here is a Threefold Motion of the Earth diſtinctly and clearly diſcrib'd, perform'd in this Time, one toward the Eaſt, another toward the North, and a Third toward the South, having three different Tendencies, and making three different and diſtinct Revolutions, and all conſiſtent in Perpetuity from the firſt Inſtant of the moving of the Earth at all, to this Day.

Having thus in ſhort begun to explain what I mean by a Threefold Motion, or three diinct Motions of the Earth, I ſhall henceforward call the two laſt of them, the Inclination of the Earth to North and South, or rather, its Declination from the Centre of the Sun, both North and South, in regard they muſt be taken, and us'd, and ſtand in the Place of what was call'd before the Northern and Southern Declination of the Sun, and will anſwer the ſame End, therefore may properly be call'd the Declination of the Earth.

But for the further Illuſtration of all theſe three different Motions of the Earth, I ſhall uſe the following Similes or Compariſons;

The firſt Motion to be ſpoke of in Order, is, that from Weſt to Eaſt, call'd the Diurnal, making its Revolution about its own Axis in twenty four Hours, or one Day of Natural Time.

And hereby it makes all the Celeſtial Bodies appear to the Eyes of the Inhabitants of the Earth, as if thoſe Objects were all in Motion, ariſing in the Eaſt and ſetting in the Weſt; when at the ſame Time this ariſes from its own Motion, tho' imperceptible to them. And in this Reſpect, I compare the Earth to a Ship or Boat when moving upon the Water, near the Shore, which according to common Experience, makes all Things on the Shore appear to the Eyes of thoſe upon the Water, which are fixed on them, as if thoſe Objects were all in Motion; whereas that *M*otion is made by the Ship or Boat wherein they are (tho' during that Time they do not perceive it) and nothing at all of Motion in thoſe Objects, which to their Sight do ſeem to move.

I might give other Inſtances or Compariſons of the like Nature, as of thoſe who ride in a Coach, or on Horſe-back, or are carried in a Chair, or even walk on Foot, if they fix their Eyes at thoſe Times on diſtant Objects, which cannot poſſibly have any Motion in themſelves yet they will ſeemingly to their Sight appear as if they mov'd, when at the ſame Time the *M*otion is made by the Perſon of the Beholder,

or,

or the Chair, Coach, or Horſe that bears them. But there being no Compariſon more effectual than the Firſt, in the preſent Caſe, I ſhall omit any further Enlargement of the ſame Nature, or the making of a Parallel between the Thing aſſerted, and the Compariſons brought to illuſtrate the ſame, ſince they are ſo very apt and demonſtrative, and ſo well known in common Experience, that ſuch a Scrutiny is altogether needleſs and ſuperfluous.

And this Diurnal Motion of the Earth being always the ſame, and not interrupted or put out of its due Order or Time by the other two, is therefore to be accounted one of the Three different and diſtinct Motions of the Earth; and as to the other two, they have been before ſo clearly and plainly divided and diſtinguiſh'd from each other, that they appear as different from each other, as they are both from the Firſt.

Therefore, I ſhall now by the following Compariſon demonſtrate how theſe Three can conſiſt together in Nature, unite as in one, and ſubſiſt together in regular Order to Perpetuity.

Suppoſe a Ship ſhould ſail in a direct Courſe upon the Equinoctial Line, from Weſt to Eaſt, without the leaſt Alteration, being right before the Wind and a freſh Gale. All thoſe who have been at Sea, and know any Thing of a Ship's Way through the Water, muſt certainly know and allow, that under thoſe Circumſtances the Ship will always have a Threefold Motion, or three diſtinct Motions; for, with her direct Courſe toward the Eaſt, ſhe will continually have her Sallies or Inclination to Starboard and Larboard, that is, two other different and diſtinct Motions, one to North and another to South, and this without Intermition, at the ſame Time that ſhe continues her perpetual Motion from Weſt to Eaſt. And alſo hereby, the Ship having theſe three diſtinct Motions, it muſt conſtantly happen that between the two laſt, ſhe is always erected perpendicularly upou her Keel, her firſt primitive Poſition in which ſhe was built, before ever ſhe receiv'd any Motion at all. And as when the Ship from this erected Situation, launching off into the Water, together with her direct Motion, at the very firſt Inſtant of her floating, immediately began her Sally to one Side, and recovering from that firſt, did then after that begin the ſecond Sally to the other Side (as it is with all Ships at ſuch a Time) and often repeated theſe two different Motions, at the ſame time that ſhe continu'd to ſhoot forward, by the Force of her firſt ſtarting off into the Water; ſo it muſt be with her when under Sail, before the Wind, in a direct Courſe, as is before deſcrib'd; if ſhe ſallies to Starboard, ſhe muſt right

her

her ſelf to a perpendicular Maſt, before ſhe can do the ſame to Larboard.

Juſt ſo it was with the Earth, as well in Reſpect to its firſt Situation, before it mov'd at all in that its primitive State of Preparation; for Motion in the Air (compar'd with that of a Ship when ready to be launch'd into Motion in the Water) as at its very firſt ſtart into Motion, when it began to move toward the Eaſt upon its own Axis. For as it, like the Ship, was without Motion before, in that its Equinoctial Poſition (as I may ſo call it) ſo then it inſtantly began its different Motions in a Threefold Senſe, like that of a Ship, and has ſo continu'd ever ſince.

And as the Ship does thus float in the Sea, ſo does the Earth in its Sphere, which is given to it in the Air, and as a Ship muſt recover from its Inclination to one Side, before it can begin the ſame on the other, ſo it is with the Earth as to its Northern and Southern Motions, which has been already deſcrib'd with full Demonſtration clearly diſtinguiſhing and dividing them into two, according to their proper Order; and there ſeems to be only this Difference in the Compariſon, That whereas a Ship changes its Place upon a Surface, the Earth moves only upon and about its own Axis. But if the Calculation was made, it is very plain, that the Time of the Starboard and Larboard Sallies of the Ship are in the ſame Proportion to its direct Way toward the Eaſt, as the Northern and Southern Motions of the Earth are in Proportion to the Eaſtern; if this be done with due Regard to the vaſt Difference in their Bigneſs.

But altho' this Compariſon ſhould not hold in every particular Circumſtance, yet it is altogether ſufficient to convey to the Underſtanding, a right Idea of what it is brought for, and that's all which is intended by it.

Having thus clearly demonſtrated that the Earth has Three diſtinct Motions, and alſo how they are conſiſtent together in regular Order to Perpetuity, I come now in its proper Place, according to my foregoing Promiſe, to give my Reaſons why this Situation of the Earth with the Equinoctial Line directly oppoſite to the Centre of the Sun, before it receiv'd any Motion at all, was the moſt agreeable to the infinitely wiſe Order we behold in all the whole Creation, and that it was moſt neceſſary according to this Rule, That the Earth ſhould be ſo plac'd by GOD at its firſt Creation; and alſo that in human Reaſon, as well as according to this Rule of Order, this Poſition of the Earth is to be

preferr'd

preferr'd before any other. The Reaſon for the firſt Part of this Aſſertion is this; becauſe the Earth being thus plac'd, it could begin with the greater Regularity; its Revolutions with thoſe other Orbs which were the neareſt, and to be the moſt uſeful unto it, more particularly the Sun and Moon, its Equator being oppoſite to theirs, when Time in regard to their Revolutions did firſt commence, was the moſt neceſſary and beautiful Order, becauſe the Sun was to rule the Day and the Moon the Night; on which account it was neceſſary that they ſhould be plac'd on different Sides of the Earth, that when one diſappear'd the other might ſupply its Place; and that as the Natural Day was hereby divided into two Parts, ſo the Natural Year might be divided into two Parts alſo, which could not be done in this beautiful Order in any other Poſition; and this is one general Reaſon for this Poſition, with Reſpect to the Order of the Univerſe.

But *Secondly*, In Regard to the Earth it ſelf; this was the moſt beautiful and benificent Order, becauſe in this Poſition all the Climates of the Earth, on both Sides the Equinoctial Line, had, at their firſt Entrance into Being in the Beginning of Time with the Earth, as equal a Share as they could have in Nature, according to their diſtant Situations thereupon, of the Light of the Sun, and the equal Length of Days and Nights, on both Sides of the Equinoctial Line at the ſame Time, which cannot be ſaid of any other Way of placing the Earth whatſoever.

Thirdly, And this Poſition of the Earth was at that Time moſt neceſſary, or the moſt beneficial Order for that State of the Earth at that Time in Its Infancy; that the Sun might at once communicate to all Parts of the Earth alike at its firſt Creation, its utmoſt benign Influence, for the Benefit and bringing forth of all its Natural Productions whatſoever, which were immediately to iſſue from its teeming Womb, ready to be deliver'd of its Firſtborn Fruits, according to the Bleſſing pronounc'd unto it by its great Creator.

And *Fourthly*, This Poſition in all the foregoing Reſpects was moſt agreeable to the univerſal happy State in which the Earth was to be created, in Order to make it a moſt glorious and delightful Paradicical Habitation for Mankind, whoſe bliſsful Happineſs therein was in a great Meaſure to conſiſt in his Enjoyment of the ſame, in the higheſt, and conſequently the moſt univerſal Perfection of all Things which it was capable of affording to him, and which he was capable of enjoying in his State of Innocency and Favour with GOD, which could not have been enjoy'd by him before his Fall, according to human Conception,

ception) if the Earth had been plac'd in any other Manner; for if it had been plac'd with either of the Tropicks to the Centre of the Sun, it muſt have been a whole Year before all the different Climates of the Earth could have receiv'd an equal Share of its Influence; and ſo Mankind before the Fall could not have enjoy'd a perfect Paradicical Habitation in ſuch a univerſal Perfection, as we believe that *Adam* and *Eve* did before they ſinn'd and fell; for by the Scripture we muſt conclude that their Time was but very ſhort in that perfect State of Paradice wherein they were created.

Now the Uſe I intend to make at preſent of what I have before ofſer'd, in Regard to the Threefold Motion of the Earth, ſhall be, from thence to propound to the Ingenious, whether the following Advantages in Natural Knowledge may not accrue from ſuch a Syſtem: If it may be allow'd upon the foregoing Conſiderations, or what may be further offer'd by any ingenious Pen hereaſter upon the ſame Subject.

1. Whether this may not be a Means to rectify and ſettle the Kallender, to be the ſame throughout the Chriſtian World, by beginning the Year at the true Time, which is the Middle of the Summer; for if the Earth was ſo plac'd before it firſt receiv'd its Motion, there was then as much of Summer in the Northern as in the Southern Climates, before the Earth began to move, or at the Inſtant of its ſirſt Motion, which was the true Beginning of Time, and from whence the Date of true Natural Time ſhould of right Commence, and be moſt properly taken and eſtabliſh'd: For by this Rule the Year ſhould begin at Midſummer, and conſequently end at the ſame Time.

2. Whether the *Chineſe*'s account of the Beginning of Time, which (according to the Report of ſome who have been there) begins ſome Thouſand Years before ours, may not ariſe from this Foundation, only with this Difference, that if they began their Year at *Midſummer*, they might End the ſame at the latter end of *December*, according to that Revolution of Time which is made by the Northern Declination of the Earth, and its return again to its firſt Poſition, and then reckon the Southern Declination, and return for another Year after the ſame Manner, by which their Year may conſiſt but of Six Months, and on that Account very well amount to a greater Number of Years in their Chronologies than ours, although began ſo near the ſame Time, with thoſe Accounts of it which are now in Uſe in *Chriſtendom*: Yet it ought to be conſider'd, that the Difference of Old-Stile and New-Stile here, muſt ariſe from ſome Uncertainty as to the right Beginning of

Time, and whether this Rule for the true Beginning of Time, may not rectify that Miſtake, and ſettle it upon its true Foundation.

3. Whether the Ebbing and Flowing of the Sea may not be found to proceed from the Northern and Southern Declination of the Earth, in Conjunction with that of rhe Eaſtern Motion: For, conſidering the Earth in its firſt Poſition, without any Motion at all, there could be no Ebbing and Flowing of the Sea, in the Eye of Reaſon. It being certain that there has been a Time when the Waters of the Sea had no Motion, until, as we find in the Beginning of *Geneſis*, that the Spirit of GOD, by Almighty Power, moved upon them, by which it is plain, that till that Time, altho' they were in being, yet they were, as I may ſo expreſs it, in a State of Inactivity, for want of the Power of Motion, being, in common with the other Parts of this Orb, as it is there expreſs'd, *Void*, that is to ſay, void of Motion, void of that Order, in which Motion was neceſſary to eſtabliſh it: And therefore, in this State of the Earth and the Sea, before the moving of the Firſt, gave Motion to the Second, I compare it to a Bowl of Water, in which, (if you put it a float, in another Veſſel of Water which ſtands ſtill,) the Water in the Bowl will be without Motion, and the Surface thereof exactly and truly Horizontal, without changing its Place in the Bowl; but if with your Finger you bend the Bowl down on one Side, or any Way make it to vary from its true Horizontal Rectitude, the Water in it will paſs its firſt Bounds, alter and change its Place, according to the Degrees you have depreſs'd the Bowl, Flowing on that Side, and conſequently Ebbing on the other, as much as it flow'd there, according to the fluid Nature of Water, which muſt of Neceſſity according to the Rules of Gravity, ſhift its Place under ſuch a Circumſtance.

Now, the Earth having a Place prepar'd for it by the great Creator, it receives and holds the Sea, as a Bowl does Water, and as the Bowl floats without Motion, in another Veſſel of Water, ſo did the Earth float in the Air at its firſt Creation without Motion in true Horizontal Rectitude, as we may very well in Reaſon ſuppoſe and allow, and conſequently the Water of the Sea contain'd in it, muſt be the ſame as that in the Bowl, it muſt be ſtill, and keep its Place; but, as when the Bowl is touch'd and depreſs'd on one Side, it makes the Water change Places, Flowing and Ebbing, as is before deſcrib'd; ſo when the Earth receiv'd its firſt Motion to the North and South, it gave Motion to the Sea, which muſt(according to the Fuidity of Water,) by the Rules of Gravity change Places, as it did in the Bowl, Ebbing and Flowing according to the Degrees of the Depreſſure of the Earth, which muſt be North or South, for, there can be no Depreſſure by a Motion upon its own Axis from

from Weſt to Eaſt; for in that Reſpect it muſt in all Parts, both Earth and Water, be ſo equally poyſed, as to move round in a regular Circle, and equal Motion becauſe it is the Meaſure of Time; which otherwiſe could not be truly kept by it: And ſo it may move continually, without making any change of Place in the Waters of the Sea: Its Motion that Way being ſo very ſwift, that the Sea turns with the Earth, poiſeing it ſelf without ſhifting Places: Which I ſhall illuſtrate fully, by the Compariſon before us: For if you give the Bowl of Water as it floats, a twirl round, ſo as to make it move about in its Horizontal Poſition, altho' with the greateſt Rapidity, yet the Water in the Bowl will turn with it, without ſhifting its Place by Ebbing or Flowing, as it did when one Side of the Bowl was depreſs'd more than the other. So in like Manner, the Earth is, in its Horrizontal Poſition, in the whole Courſe of its Diurnal Motion, equally poiz'd every Way; and conſequently that Motion cauſes no Alteration in the Waters of the Sea; therefore their Alteration of Place muſt be aſcrib'd to the other Cauſe; and more eſpecially, in Regard that the Depreſſure of the Earth by its Declination to North and South, is ſo very ſlow, that it gives full Liberty to the Waters, to move and change Place according to their Nature, it not having ſufficient Power by its Swiftneſs of Motion to hinder the ſame in this, as in the other Caſe; for the Motions North and South, are but a few Minutes of a Degree in Twenty four Hours; whereas the other is three Hundred and Sixty Degrees in that Time, between which there is no Compariſon to be made: But there is a very near Proportion between the Alteration in the Poſition of the Earth made by this ſlow Motion, to North or South, and the riſing and falling of Tides: But theſe Tides I take to be of the Nature of the Water in the Bowl, which by a ſudden Depreſſure, joyn'd with its own Fluidity and Gravity, being put into Motion; all theſe uniting together and puſhing it on, makes it gather ſuch a Degree of Rapidity, as forces it beyond its Bounds; ſo that it will always go beyond the Degree of Preſſure, to which the Bowl is alter'd, but immediately returns back, and ſettles at its new Horizon, till it is puſh'd again, after the ſame Manner from that to another: So it is with the Water of the Sea, it receiving a Puſh by every Part of the Northern or Southern Motion of the Earth, that makes it (if I may ſo expreſs it) by its own Weight and Fluidity in the Motion, give a Swaſh, or a Surg, beyond its Bounds, and this makes a Tide: But then it immediately returns to its Place again, which alſo makes an Ebb; and that, becauſe it is ſuck'd into its Place again, by the rapid whirling of the Eaſtern Motion, which draws the Waters into their proper Place, whenever they endeavour to make too great an Excurſion; as it is with the Water in the Bowl; for if upon its Ebbing and Flowing you turn the Bowl round Horizontally, it ſucks in, or reduces the Water to its ſettled Horrizontal Bounds, from the Excurſion made before by its Flowing. And in this Reſpect, as is before expreſs'd, the Eaſtern Motion does in Conjunction with the Northern or Southern, regulate the Waters of the Sea in their Ebbing and Flowing; the Northern and Southern making them flow, and the Eaſtern Motion, by its powerful Rapidity, drawing them back by ſucking them in like a Whirl-Pool, into their proper Bounds again; both which being continually repeated every Twenty four Hours, may very rationally be deem'd the Cauſe of the Ebbing and Flowing of the Sea, which the infiwiſe Creator has been pleas'd to eſtabliſh in Nature.

The next Thing in Order, according to the Title to touch upon, is the Nature of the Magnet, on which I ſhall be but ſhort, it being a very hidden Myſtery: Therefore I ſhall here but give a Hint of what occurs to my Mind on that Subject.

I have by two former Obſervations concerning the Magnetick Needle; and often revolving the ſame in my Mind ſince, come to a rational Conjecture concerning the Cauſe of its Tendency toward the Poles; for I believe it may as well be allow'd a Tendency to one Pole as to the other, or that in doing of one, the other is done alſo; ſo that I ſhall not aſcribe it wholly to a Magnetick Vertue in the Northern, more than in the Southern Pole, which makes the Needle tend that Way; but to both of them together, the Cauſe in Nature, which I am to give of this Inclination of the Needle being lodg'd in one as well as the other.

And in order the better to explain my ſelf, I ſhall firſt lay down my Obſervations, and then draw ſuch proper Inferences from them, as the Nature of the Caſe will bear.

The Firſt Obſervation ariſes from the Alteration that Mariners have found in their Compaſſes, when they have been upon the Equinoctial Line, more than at any other Time or Place: For as it has been credibly reported to me, by more than one, which I have had Reaſon to depend upon, both for Knowledge and Sincerity: the Compaſs upon the Equinoctial Line, is very uncertain, at the Time when that Line is exactly under the Sun, or (as I now rather chuſe to expreſs it) when the Earth is in her firſt Poſition, before ſhe receiv'd Motion, having her Equator oppoſite to the Centre of the Sun. Now in this Caſe I conſider the Needle as at the utmoſt Diſtance from its Magnetick Poles, from whence it derives its Vertue; and being thus remote from their Aid, in this the weakeſt State of its Magnetick Power, it is attack'd by its greateſt and moſt powerful Enemy, the Sun, with all the Advantages that Nature can give it, to exert its utmoſt Strength, againſt its Oppoſite, its Adverſary, the Magnet; which under theſe Diſadvantages is overcome, and diveſted of its former Strength, and ſo becomes uncertain and uſeleſs, while it remains under that Circumſtance of Captivity, by its Conqueorr the Sun: but as it gets from under this Superiour, towards either of its Poles or proper Centres, by their Aſſiſtance, it paſſes under a Reſurrection from that State in which it ſuffer'd a Degree of Death, reaſſumes its former Life, Vertue, and Uſefulneſs as before.

From this Obſervation I may very well in Reaſon be allow'd to draw the following Inference, That the Magnet derives its Vertue from the Centre of Cold, or as I may ſo expreſs it, in Regard to the Earth, from the Centres or Treaſures of Cold, which are plac'd in both the Poles, as much in one as in the other; and therefore being impregnated by them with its Magnetick Power, and having receiv'd into it ſelf from them both, two oppoſite Points or Poles, looking reſpectively at both its Friends, from whom it has receiv'd equal Benefits, it regards the one as much as the other in that Reſpect, and alſo by communicating its Virtue to the Needle, which is touch'd by it after the ſame Manner in which it receives it from them, and as an exact Copy of that Vertue or Power with which it ſelf is inveſted; that is to ſay, with a North and a South Pole in it ſelf, which every Needle receives from its Magnet: And theſe regarding at all Times their proper Centres, the Poles of the Earth and thoſe of the Univerſe united, or the two moſt powerful Regions of Cold, as a Tribute of Homage they always tend toward them, acknowledging thereby that they are their Offspring, or Subjects of thoſe frigid Kingdoms.

Now to corroborate, or give the greater Force to my former Obſervation, I ſhall here produce the other, making uſe of it as of the firſt, it being a very clear

clear Inſtance of the Enmity between the Centre of Fire, and the Magnetick Needle. And this is taken from the Power of Ætherial Lightning upon the Mariners Compaſs: For there have been many undoubted Inſtances of this, one of which I have ſeen my ſelf; that is to ſay, a touch'd Needle, ſo diveſted or ſtrip'd of its Virtue by Ætherial Lightning, as to be render'd of no manner of Uſe, having no more Tendency to the Poles afterwards, than it could have had before it was touch'd, altho' it had been known to be very good before the Lightning by its ſubtile Fire had ſtruck it dead, and that by ſuch a mortal Dart, as that it could never revive again; the Fire having utterly extirpated its Enemy from thence, and kept Poſſeſſion it ſelf; as Heat whenever in Poſſeſſion immediately expels all Particles of Cold as its oppoſite Principle. The Difference between the former Inſtance and this, lies only here; that in the firſt we find the cold Principle ſurpriz'd, diſarm'd, and taken Captive, by its Antagoniſt, the Principle of Heat, and its Power only for a Time ſuſpended, and then reſtor'd again; but in the laſt it receiv'd its mortal Wound, in that ſmall Part of its Dominion, or rather, put to flight from thence.

And thus I am now led to ſpeak of the Variation of the Compaſs, which I ſuppoſe may be aſcrib'd, in a great Meaſure, to the following Cauſes, if not altogether proceeding from them. And I ſhall here ſpeak by Way of Query, whether the different Degrees of the Variation of the Compaſs, may not proceed from the different Degrees of Heat and Cold, according to the different Diſtances of the ſeveral Climates of the Earth, from the Sun: And this in two Reſpects.

1. Conſidering the Earth as it was firſt plac'd in Regard to the Sun, without any Declination from its Centre, to North or South.

2. Conſidering it in the different Degrees of Northern or Southern Declination.

As to the Firſt, If the Needle in that firſt State of the Earth be render'd uncertain in a great Degree, by the Sun upon the Equinoctial Line; it follows, that wherever the Sun can reach it by its Influence at greater Diſtances, it may cauſe ſome diſorder in it, according to its Power in that Place, from the Enmity between them: But if in this State of the Earth, when the cold Principle in the Poles of the Earth, and that in the Poles of the Univerſe alſo are united together to attract the Needle, the Power of the Sun can give diſorder, and ſo weaken it, as to cauſe ſome Variation wherever it can reach it by its Influence; then much more ſo, when the Norrhern or Southern Motion of the Earth divides the Power of the cold Regions, and conſequently weakens the ſame, ſo that it cannot attract the Needle ſo ſtrongly as before, when they were united; for the Earth's Declination to the North, brings the Southern Pole 23. Deg. 30. Min. nearer to the Sun than it was in its firſt Place; and the Earth's Declination to the South will have the ſame Effect upon the Northern Pole: And this ſo divides the Power of the cold Kingdoms, that one or the other of them is always liable to be weaken'd in this Manner, by the Power of the fiery Kingdom, which is always united, and being between them both, is therefore at all Times capable of keeping them aſſunder; for if they had Power to joyn together, they would at the ſame Time extinguiſh their oppoſite Principle, the Power of the fiery Regions: And from this continual War may proceed this Diſorder or Variation, which is found in the Magnetick Needle of the Mariner's Compaſs; which being joyn'd with other Reaſons in Nature that have been formerly given, may ſuffice.

As to Sea Currents, if they ſet Six Months one Way, and Six Months another, they may alſo proceed from the Northern and Southern Motions of the Earth, which are each of them made in that Time, one continually taking Place of another; and there may be Paſſages through ſome Parts of the Body of the Earth, both in Northern and Southern Latitude, for the Water to change its Courſe by, without cauſing any Diſorder whatſoever in the Sea.

And theſe Motions of the Earth may be an Occaſion of drawing the Trade Winds along with them, ſince they are obſerv'd to blow after the ſame Manner, Six Months one Way and Six Months another.

As to the Multitude or Hoſt of Orbs in the Univerſe, by which the Earth is ſurrounded on all Sides, and of which we have a beautiful Proſpect, as it turns us around its Axis to behold them, I have the following Thoughts, which naturally preſent themſelves to my Mind, upon all ſuch Occaſions of Contemplation.

1. From the Diurnal Motion of the Earth, by which the whole Surface of it comes to be enlighten'd by the Sun, once in Twenty four Hours, as it turns upon its Axis for that End: I certainly conclude that all the enlighten'd Orbs I ſee about me, muſt have the ſame Advantage to receive their Light from that great Luminary of the Univerſe; otherwiſe, they could not on all Sides receive that Bleſſing as we do: Therefore they muſt have their proper Motions of this Kind, as well as we, with Periods of Time, according to their different Motions and Bigneſs of their Bodies.

2. As this Earth has other different Motions, in Order to produce their proper Effects, both as to it ſelf and other Neighbouring Orbs, according to the Nature of its Eſtabliſhment by its Creator; ſo may every one of theſe other Cæleſtial Orbs we ſee, be eſtabliſh'd, according to their different Natures and Spheres in which they are plac'd, with more Motions than one, and to produce ſuch other different Effects, as may be moſt proper for themſelves and others, to whom their Influences may reach.

3. That as all Parts of this Earth are fill'd with Variety of all Sorts of Creatures which can be produc'd from the Variety of Matter of which it is compos'd, and for which it can, according to its Nature, be a proper Habitation: So may all theſe other Celeſtial Bodies we ſee about us, be repleniſh'd with Variety of Creatures, according to the Matter of which they are compos'd, or for which they may be fitted, as moſt proper Habitations.

Now as to the Moon, it being ſo near and ſo uſeful a Neighbour to us, we are more immediately concern'd to conſider it, and its Revolution with the Earth, for our own Advantage. Therefore I ſhall put the following Query, Whether thoſe Northern and Southern Motions of the Earth may not be a great Help to find out the Place of the Moon at all Times, and to calculate Tables for that Purpoſe: As alſo of the Declination of the Earth, with more Accuracy than thoſe of the Sun's Declination have been before.

And *Laſtly*, Whether the Northern and Southern Inclination of the Earth may not be of great Uſe to facilitate the Diſcovery of the Longitude, at Sea and Land, by Aſtronomical Obſervation, ſo as to be Geometrically demonſtrated for common Practice. Concerning which, and alſo the Manner how to find out the true Place of the Moon, I have ſomething to offer to the Publick hereafter.

MVSEVM BRITANNICVM

FINIS.